

# CATS

CAPITOL AREA TIMEX/SINCLAIR  
 USERS GROUP :Formerly  
 Prince George's  
 Timex/Sinclair User's Group

# NEWSLETTER



June 1985  
 Vol. 3, No. 3

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## PRESIDENT'S COLUMN

### Actions by the Members:

I've been using this space over the last few months to point out the vitality of the Timex-Sinclair "scene." Another vital side of what's happening are the newsletters, and this one (yes, us) in particular. Our articles are being picked up by outside user's groups, and being spread to their members. Mihaly Grell's Rotating Globe, Mike Morris' Keyboard scanning, and more recently, Allan Pollock's Timex interview and Roald Schrack's 3D Plotting program (among others) have spread the word of our group to a wider audience. Congratulations!

Other users groups have contributed more than their share to the advancement of T/S computing. Sincus News has consistently run informative and probing pieces on the T/S operation. L.I.S.T. shows a consistent innovation in hardware projects. Triangle S.U.G., with their non-profit status, mails out a jam-packed legal sized letter. There are many others I haven't mentioned; this only means that I can't keep track of them all - there are some other gems waiting out there.

If you want to see for yourself, show up on Monday nights at the hardcore committee meeting. All the year's newsletters from other clubs will be there, and, if there's something that interests you.....

### Copies!

.....Jules Gesang has donated a copier to the club. I've got it going, and it's available to copy public domain

software listings and documentation, or past newsletter articles from CATS newsletter or others. THANK YOU JULES!

In the aftermath of AERCO's presentation of their disc drive to the club, a number of members got together and assembled a group purchase of the AERCO drive and interface. They deserve congratulations - outside of a few tape purchases, this is the first grass-roots cooperation we've had! I'm looking forward to the delivery of the goods, and a first-hand report on its utility. Don't forget the newsletter, guys!

### The Hardcore Committee:

I don't care what you call it - I've tried "Executive Committee," but I suspect that that's scared off potential attendees. For now, I'll try "Hardcore Committee" to capture the informal nature of the get togethers. It's held every Monday night at 700 Erie Ave, Takoma Park. My phone is 589-7407.

Last week, we tried out Tom Bent's new QL computer. We gave it a thorough going over, and a preliminary run through the four major programs that are included in the package. Its a well designed unit - the keyboard is easy to get used to, and the two built-in microdrives look sturdy and durable - just one moving part! It comes with a word processor, spreadsheet, filing program, and chart producer. The chart producer is the best at showing off the immense graphics abilities of the machine (you can only type so fast on a word processor, after all), and we had fun making up incredible graphs to test the auto-scaling feature of the bar chart. We did a quick comparison with a Kaypro 10, and it did as well as expected. A good machine!

Continued on page 9.



Machine code  
course set for  
May 25th start

The Chevy Chase Library will host the MC/Assembly Language course on Saturday, May 25th from 2 to 4:30, and also Saturday June 1st, same time. Application has been made for course continuation during three Saturdays each month through August. We will be notified at the first two meetings whether we are cleared to have the space more than once a month, which is normally the limit unless we receive special librarian sponsorship, which is in the mill.

The convenient location is four blocks south of the beltway on Connecticut Avenue. Going south from the beltway, it is next to the fire house on your left at the fourth set of traffic lights which should be flashing yellow. Make "U" turn at next street. Coming from the south, you will find the library just beyond the fire station at the flashing yellow lights a few blocks north of East-West Highway (Route 410) on Conn. Ave.

The principal text will be "Programming the Z80" by Rodney Zaks. Try to find a copy at a Radio Shack store which has lowest price, otherwise Maryland Book Exchange carries it. (John Conger)

TAPE DUBBING

By Jim MacKenzie

I'm very sorry I missed the last meeting, I had transportation problems. I will make it up to you at the next meeting. I will bring two tapes about 15 to 20 minutes each with programs for the TS 1000, and also the 2068 tape that was dubbed at the Apr meeting. I would like to point out that the success of this project entirely depends on members contributions. Please contact Mark 301-589-7407 or me 301-495-9139 after 4 pm about this.

At the next meeting I'll have two spare tape recorders for people to use, but remember it is always best to use your own tape recorder. Also I'll have some cheap 45 min tapes for sale. This tape dubbing involves a lot of equipment, about nine different electrical cords. I really would appreciate it if at least some people will opt to run their tape recorders on batteries.

Now the surprise, lo and behold there are still good new games being produced (in England) for the TS 1000. So far they have three hi res games available from Curry Computer for \$10.95 each. I have ordered "Forty Niner" and will be demonstrating it at the next tape dubbing. Any one else wanting to demonstrate some of their programs are welcome.

**Puzzle:**

Write a short basic program that will print to the screen:

1,1,1,2,2,2,3,3,3

(No fair using "1,1,1,2,2,2,3,3,3")

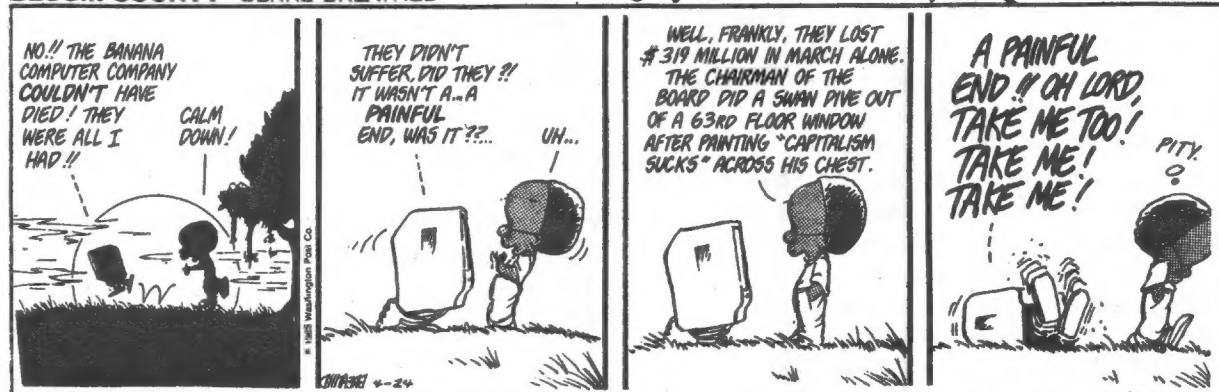
Write a short program that will accept a string input, then spell it backwards on the screen. eg: Input "Brown", prints "nworB"

I'll cover these at the meeting.

MF

BLOOM COUNTY BERKE BREATHED

WASH. POST. 5/85 (SOMETIME)



## An Interesting Membership Profile

At the April meeting, brief autobiographies were submitted by 36 of the 40 plus attendees, which had been requested to help plan meeting agendas and the thrust of the News Letter. The results were interesting and helpful to the editor and the officers of your club.

Twenty five had strong technical backgrounds from PhD in physics to TV repair, and included several electrical engineers. Nine were in some nontechnical business and two were students.

Fourteen have had experience with mainframes or minis, some going back over twenty years. Sixteen indicated some knowledge of high level languages other than BASIC:- Pacal, Fortran, Cobol, IBM assembly language and five show Machine Code training. Eleven show graduate degrees or engineering. Seven have Bachelor degrees in nontechnical subjects. Eight are retired. Eight work in government. Five are self-employed.

Twenty eight have one or more T/S1000's; twenty seven have the T/S2068 (most have both).

The equipment list is not so clear but only two show modoms, three have Commodore 64's and three have 64K memories (I am sure there are more).

The comments indicate strong interest in hardware projects and Tom Bent has expressed interest in heading up such activity, perhaps doing machine modifications (2068 ROM switch installation?)

It also seems possible that resignations over the years have been heavily representative of business or nontechnical interests, since most users groups are more heavily weighted toward those activities than we seem to be, if the April attendees are a fair sample of our total membership. At any rate your officers, editor and the new administration will make an effort at meetings and in the News Letter to better meet the needs of, and at a level of approach somewhat more in tune with, beginners and business people. (John Conger)

!!

FW PRODUCTS...RUMORS...AND STUFF

!! !!!

, Pollack

With all the great Spectrum games coming into the U.S. for TS 2068's with Spectrum ROM devices, what a shame we can't use the joy stick option. The 2068 joy stick ports are disabled when using the Spectrum mode.

Enter G. Russell Electronics. Now you can buy a simple cartridge port plug-in joy stick adapter and make those Spectrum programs really humm. Price: \$19.95.

And how's this for competition. Late June, early July should bring into the arena another disk storage package for the 2068.

Look out Aerco, here comes Zebra! "They say" that the Hitachi 3" Disk Package is "ready". I hope so. I wouldn't want this to be a higenbottomless claim.

The Z people say that the Hitachi package will be easier to use than the Aerco. It will have an intelligent DOS with its own Z80 chip operating at 4mhz with a 16K "scratch pad" on-board Ram using no Ram from the 2068. 64K CPM expansion option to follow soon. The Zebra target price is \$299.

Hey Zebra, what about letting us use our Spectrum programs with this package, too.

And from the Keystone State comes the great TS 1000 COLOR program for BLACK and WHITE TV sets. Under development since the '50s, you actually can have color on your B&W TV sets through your TS 1000 computer. This program is worth it just to see it work. No firm price or delivery date at press time.

This was written with MSCRIPT 2 and printed with a Star PowerType.

=====  
For Sale: TS 2068. Used only 2 months. \$115. ALAN 202-363-2244

For Sale: 90-100 Westridge MODEMS One price takes them all. 32K RAM's \$25 - 16K RAM's \$15 + S&H. 301-922-0767

For Sale: TIMEX 2068 TECH Manual \$15. 301-922-4495

## A Programming Tip Revisited

The April issue carried a renumbering program for the TS-1000 (or Z-81) by Mark Fischer. See page 18 of the issue for his discussion and page 17 for the example. This routine will work for the 2068 also if you change line 9000. In Mark's example, the value of X=16509 (for the TS-1000) is the starting address of the basic program in memory. This is explained in the manual on page 128.

For the 2068, the story is slightly different as Mark explained to me. The address giving where the basic program begins is found at addresses 23635 and 23636. (The address requires two bytes). The 2068 defines these location in Appendix D, "The System Variables". (On page 263, note the address for PROG.) So you PEEK these addresses to find where the basic program begins as is illustrated in the program below.

The bottom line is that Mark's program is now set up for the 2068. Try it on one of your routines. Use it as a utility and merge it onto the end of any program you write and watch it renumber the program. Thanks Mark, I learned something.

Ward Seguin

```

8000 REM Renumbering program.
8100 REM by Mark Fisher
8200 REM April, 1985
8300 REM
8400 REM
9000 LET X=PEEK 23635+256*PEEK 2
9010 LET N=10
9020 IF PEEK X*256+PEEK (X+1)>=
9030 THEN STOP
9030 POKE X,INT (N/256)
9040 POKE X+1,N-(PEEK X*256)
9050 LET X=X+PEEK (X+2)+PEEK (X+
9060 3)+4
9060 LET N=N+10
9070 GO TO 9020
    
```

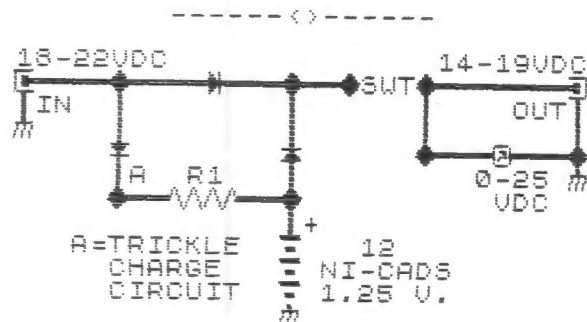
## TO THE "CATS" EDITOR:

THE CIRCUIT BELOW IS FOR A BATTERY BACK-UP SUPPLY FOR THE TIMEX 2068. IT JUST MAY SAVE A LOT OF HARD WORK WHEN YOU HAVE A POWER OUTAGE ! THE BATTERIES ARE AUTOMATICALLY MAINTAINED.

### HOW IT WORKS ----

AS LONG AS YOUR POWER IS ON, THE HIGHER P/S VOLTAGE BLOCKS THE BATTERY VOLTAGE. AS SOON AS THE POWER GOES OFF, THE BATTERY VOLTAGE TAKES OVER UNTIL YOUR POWER IS RESTORED.

THIS SUPPLY CAN BE USED WITH THE T/S 1000 BY REDUCING THE NUMBER OF BATTERIES TO SEVEN.



R1-ABOUT 500 OHMS, ADJUST TO OBTAIN A 30 MA. CHARGE RATE. DIODES-SILICON, 1 AMP. METER IS OPTIONAL.

THIS PROJECT WAS SUBMITTED LAST YEAR BUT MUST HAVE BEEN LOST IN THE SHUFFLE !

YOURS TRULY,

R. CAUFMAN, WB3BAP  
739 SILOAM ROAD  
CHAMBERSBURG, PA.  
17201

## UNCLASSIFIED

FOR SALE: TS1000, 16K RAM, and 2040 printer - \$75.  
Also Timex books at half price. Call Cy - 493-8661.

FOR SALE: TS1000 set, including 16K memory, thermal printer, sme software, paper, magazines, books and - best of all - a Byte-Back II Modem with software and manual. Negotiations start at \$75. Call Walter at (703) 860-5809.

FOR SALE: TS1000 w/16K RAM module; 2040 printer; Programs - WordSinc II.3, Electric Cost Analyzer, Vu-Calc, Solar Water heater; also Morse, Adamson et al. The Essential Guide to T/S Home Computers. All complete in original boxes. Call 588-4107 after 6:30, SAT, or SUN.

T/S1000/ZX81 32-COLUMN PRINTERS:  
T/S 2040 AND ALPHACOM 32 COMPARED

The TIMEX/Sinclair 2040 Printer normally does not work with a 64K RAM. However, they can be made to work together by removing C4, C5, and C6 from the PC board inside the T/S 2040. But even after that work, LPRINT does not work from the keyboard. This is a real inconvenience when trying to write a program containing LPRINT with a 64K RAM attached. The "MERGE" program that I passed out at the February meeting can be used to copy previously stored LPRINT code from another RAM operating at 8-16K into the 16-32K BASIC program area, as one solution.

But the Alphacom 32 Printer has neither of these disadvantages, and otherwise it is identical to the T/S 2040 Printer in operating characteristics.

Both types of printers can test themselves. Hold down ON while pressing OFF twice, and alternating lines of 1s and 8s will be printed if the printer is good.

Both types of printers can be used in 240 VAC countries with the Alphacom 240 VAC power supply.

Chuck Fink

### OLD MAGAZINE, NEW MAGAZINE

You are indeed correct that *Computers and Electronics* magazine died the horrible and long overdue death it so rightfully deserved ("News Desk," March 18, 1985). But *Popular Electronics* still lives!

Several of the original *Popular* "good guys" are now publishing *Modern Electronics*, which is full of the traditional older hands-on electronic construction stuff, low-cost kits, easily understood tutorials, the whole bit. Many of the original authors are back, including Forrest Mims, Marcia Swampfelder, Stan Prentiss, Len Feldman, myself, and bunches more. *Modern Electronics* is at 76 N. Broadway, Hicksville, NY 11801; (516) 681-2922.

*Infoworld*, 5/7

Don Lancaster  
Thatcher, AZ

One of our members chose this way to announce a recent happy event.

\*\*\*\*\*BIRTH ANNOUNCEMENT\*\*\*\*\*

MR. AND MRS. EDWARD B. ARNOLD  
ARE PROUD TO ANNOUNCE:

ON MAY 2, 1985 AT 2:24 P.M.,  
OUR NEW BABY BOY WAS BORN.  
THE BABY IS NAMED MICHAEL  
ANTHONY.  
OUR BABY WEIGHS 8 LBS., 12 OZ.,  
MOTHER AND BABY ARE DOING FINE.  
DELIVERY WAS BY CESAREAN BIRTH,  
BECAUSE YOU ARE SPECIAL TO US,  
WE SEND YOU THIS JOYFUL  
ANNOUNCEMENT.

```

1 REM "BIRTH ANNOUNCEMENT"
5 PRINT "WHO ARE THE PARENTS?"
"
6 INPUT E$
7 CLS
10 PRINT "WHEN WAS THE BABY BO
RN?"
20 INPUT A$
30 CLS
35 PRINT "WAS THE BABY A BOY O
R A GIRL?"
36 INPUT F$
37 CLS
40 PRINT "WHAT IS THE NAME OF
THE BABY?"
45 INPUT B$
50 CLS
60 PRINT "HOW MUCH DOES THE BA
BY WEIGH?"
65 INPUT C$
70 CLS
75 PRINT "WAS THE DELIVERY BY
CESAREAN BIRTH OR NATURAL VAG
INAL BIRTH?"
80 INPUT D$
85 CLS
90 PRINT
95 PRINT "*****BIRTH ANNOUNCE
MENT*****"
100 PRINT
104 PRINT E$
105 PRINT " ARE PROUD TO ANNO
UNCE:"
106 PRINT
107 PRINT
110 PRINT "ON ";A$;","
120 PRINT "OUR NEW BABY ";F$;"
WAS BORN."
130 PRINT "THE BABY IS NAMED ";
B$;","
140 PRINT "OUR BABY WEIGHS ";C$
";"
151 PRINT "MOTHER AND BABY ARE
DOING FINE."
152 PRINT "DELIVERY WAS BY ";D
$;","
160 PRINT "BECAUSE YOU ARE SPEC
IAL TO US,
FUL
ANNOUNCEMENT."
170 STOP

```

# BYTE-BACK

IN THE BEGINING THERE WAS SINCLAIR  
THEN THERE WAS BYTE-BACK

INC.

RT.4 BOX 54, LEESVILLE, SC 29070

BYTE-BACK HAS BEEN MANUFACTURING PERIPHERALS FOR TIMEX / SINCLAIR COMPUTER OWNERS SINCE 1981. IT HAS ADDED MANY NEW PRODUCTS SINCE ITS FIRST M16 AND BB-1 CONTROLLER. BYTE-BACK HAS PULLED THROUGH THE DEMISE OF TIMEX AND WILL CONTINUE TO PROVIDE SUPPORT AND NEW PRODUCTS IN THE FUTURE.

**MODEM** MD-2B for ZX81,TS1000,TS1500  
MD-68 for TS2068

ALL THE FEATURES NECESSARY FOR TELECOMMUNICATIONS WITH SERVICES SUCH AS COMPU SERVE OR YOUR LOCAL BBS

- \* upload and download text to and from memory and tape
- \* 300 baud - word length, parity, etc. selectable
- \* direct connect with phone load for clear communication
- \* RS-232 port for adding full size printers
- \* 2 hour compuserve demo pack
- \* 5 hour compuserve starter kit available separately

**64K MEMORY** UM-64 for ZX81,TS1000  
NOT AVAILABLE FOR TS2068

EXPAND YOUR TIMEX/SINCLAIR TO ITS FULLEST POTENTIAL

- \* 8-16K area selectable in 2K increments
- \* eeprom socket for preprogrammed eeproms (2K and 4K)
- \* reset switch which only resets the 16 to 32K area
- \* battery back up to stop annoying crashes
- \* rom-ram transfer for machine code buffs
- \* this is not a nonvolatile ram!

**CONTROLLER** BB-1 for ZX81,TS1000,TS1500  
BB-68 for TS2068

CONTROL THINGS WITH YOUR TIMEX/SINCLAIR

- \* 8 independent relays
- \* 8 led status indicators to monitor status of relays
- \* analog to digital converter sold separately to allow controller to measure voltages
- \* 8 logic inputs

**RS-232** RS-232 for ZX81,TS1000,TS1500  
RS-232-68 for TS2068

YOUR TIMEX SINCLAIR CAN OPERATE FULL SIZE RS-232 TYPE PRINTERS

- \* cable and software sold separately
- \* C.ITOH 7500AR serial printer available separately

**PARALLEL** PARALLEL 1000 for ZX81,TS1000,TS1500  
PARALLEL 2068 for TS2068

YOUR TIMEX SINCLAIR CAN OPERATE FULL SIZE CENTRONICS PARALLEL TYPE PRINTERS

- \* 5ft cable and software provided
- \* C.ITOH 7500AP parallel printer available separately

## 90 DAY WARRENTY ON ALL MODULES

Any hardware module may be returned for a full refund within 10 days of receipt.

BYTE-BACK offers a few hardware kits for kit builders. Our kits require excellent soldering ability.

Kits include a high quality printed circuit board and all of the parts.

Kits have a 90 day warrenty on parts only. Kits may not be returned for a refund once they have been started.

**TELEPHONE (803) 532-5812**

__UM-64 assembled	\$119.95	__kit \$109.95
__BB-1 assembled	\$ 69.00	__kit \$ 59.00
__BB-68 assembled	\$ 69.00	__kit \$ 59.00
__RS-232 assembled	\$ 69.95	__kit \$ 59.95
__RS-232-68 assembled	\$ 69.95	__kit \$ 59.95
__MD-2B assembled	\$149.95	
__MD-68 assembled	\$149.95	
__A-D converter assembled	\$ 29.95	
__Test lead for A-D	\$ 3.95	
__PARALLEL 1000 assembled	\$ 84.95	
__PARALLEL 2068 assembled	\$ 84.95	
__CABLE FOR RS-232	\$ 19.95	
__PRINTER SOFTWARE FOR RS-232	\$ 19.95	
__ZX PRO/FILE (TS1000)	\$ 16.95	
__ZX PRO/FILE (TS2068)	\$ 29.95	
__COMPU SERVE 5 HOUR PACKAGE	\$ 29.95	
__7500AR SERIAL PRINTER	\$329.00	
__7500AP PARALLEL PRINTER	\$289.95	

THERE WILL BE A \$4.95 SHIPPING CHARGE PER ORDER.

PLEASE SPECIFY COMPUTER TYPE \_\_\_\_\_

PLEASE BILL MY \_\_AM.EXP. \_\_VISA \_\_M/C

CARD # \_\_\_\_\_ EXP DATE \_\_\_\_\_

\_\_ I HAVE ENCLOSED A CHECK OR MONEY ORDER

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

PHONE \_\_\_\_\_

Thanks for the Paid Ad, Byte Back! We appreciate your vote of confidence.

## NEW PRODUCT ANNOUNCEMENT

RAMEX International and NOVELSOFT are pleased to announce a truly significant event in 2068 graphics!

A-R-T-W-O-R-X  
written by David C. Ridge

ARTWORX is the finest, most comprehensive artistic graphics program available for your 2068!

Scan the impressive list of features below and I'm sure you will agree that these words have meaning!

Free hand SKETCH with joystick with up to 64 combinations of VELOCITY, DENSITY, and BRUSH!

SPRAY paint simulation!

FILL command for any shape!

Draws lines at any angle using STRING, DEFINE, or RADIAL!

Commands for CIRCLE, ARC, and ELLIPSE. Yes ELLIPSE!

RELOCATE, DUPLICATE, or ROTATE any image!

Four different TEXT fonts on the screen!

The most comprehensive UGD designer ever created for the 2068, with storage for 84 UDG!

Four different erasers. GLOBAL WINDOW, COARSE and FINE!

Supports the 2040 and the TASMAN i/f

MAGNIFY and COMPRESS any image in 2x steps!

.....and many more.

Cassette - \$19.95 Disc - \$24.95

New # for RAMEX is (313) 781-5800.

The author of ARTWORX, David Ridge, can be reached on CompuServe 70416,1435.

[Koala Pad compatibility? ED.]

Help CATS, Help SYNCWARE.... Help Yourself!

CATS has been selected to act as one of the judging clubs for SYNCWARE NEWS' software contest. We need volunteer judges to look at some of the most innovative new programs from all over the country, and select the best. These are all public domain, and CATS Newsletter will be reprinting some of the submissions. Judges will get first crack at seeing these programs, and, perhaps, be able to pick up some programming tips on their own. Contact me at 589-7407 if you're interested.

SUM-WARE is now stocking the SILVER AVENGER from TIMEX of Portugal. The unit is a modified 2068. It includes both Timex and Spectrum ROMs! The rear port has a Spectrum pin configuration, allowing for easy use of Spectrum hardware. It runs direct on its own 110 V power supply. Limited introductory price \$159.95 + 5% S&H

Also available from SUM-WARE: the TIMEX Disc Drive System! This unit includes a Hitachi 3.5" Drive, Interface, Controller, Power supply, cables, and instructions. It will run on a U.S. 2068, SILVER AVENGER, or SPECTRUM PLUS, through one of the three different interfaces available (you must specify which system you have). Available NOW !!! Introductory price \$269.95 +5% S&H

Send large SASE for complete information on these and other Sinclair related hardware and software.

SUM-WARE  
810 Mammoth Rd.  
Alden NY 14004  
(716) 547-2273

Note: the above items are reproduced from distributor's announcements; no verification of claims has been made. Ed.



*"If you do get one, be sure you don't leave your floppy discs all over the place."*



## TESTING T/S 1000/ZX81 HARDWARE

The T/S 1000/ZX81 computer and attached peripheral devices may be tested operationally from programs that exercise their functions. They may be tested electrically and electronically also.

I have developed a small family of programs that test every piece of hardware in the TEGRA attache case-fitted system that I demonstrated at the February meeting. The program to test the basic computer is particularly discriminating, for it stresses properly loading and running machine code routines, as well as BASIC programs, within 1K of RAM.

Everyone who needs such testing is welcome to these programs.

However, they incorporate machine code routines which tend to be ambiguous when printed, and I think it would be wasteful to have them printed here. Anyone interested in the programs may call me so we can arrange some other way of transferring the programs.

Chuck Fink  
703-573-3171

## BASICODE A Plea for Information

Marty Jeski, of the L.I.S.T. group, has been trying to implement BASICODE. This is a standard for software exchange between 20 brands of computers, supported by Radio Netherlands and the Basicode Foundation, Eindhoven, The Netherlands. BASIC programs are transmitted, either on tape or over the air, in a common format, and translated for particular machines by a dedicated translation program for each machine. Marty wants to know when they are on the air. The manual says that programs are transmitted over BBC 4 at 200 KHz, on their "chip shop" programme, Sun., Mon., Wed., and Thurs. at 00.23 GMT: but he hasn't been able to pick it up. The Dutch embassy in NY wasn't able to help, and Marty hoped that one of our HAMs could contact Holland directly. Send any information you might have to me and Marty Jeski, 16 Cold Spring Hills Rd., Huntington, N.Y. 11743.

Marty sent the translations tape and documentation: if we can get this going, it would provide a way to translate your programs to junior's Commodore. Now, there's a good subject for a Hardcore Committee meeting!

## Sinclair Science Fair Standouts at CATS

During the 1985 Prince George's Area Science Fair held last April at P.G. Community College, two outstanding exhibits used Sinclair computers as integral parts of their displays. The exhibitors were:

MIKE O'NEILL, Bowie H.S.  
"Computer Control of Outside Devices"  
(Mathematics and Computers)

RICK COVELL, Oxon Hill H.S.  
"Robotics Via Computer Control"  
(Engineering)

Both did well in extremely tough competition, receiving recognition from various professional societies. MIKE O'NEILL also received an Honorable Mention in Mathematics and Computers, which meant he placed in the top 50% of the entrants in his category.

CATS is fortunate that MIKE and RICK have agreed to appear at the June meeting to display their exhibits and talk about their projects with us. Seated at a table on the stage, they will give us a "NASA-style" de-briefing while answering questions about how to put together a science fair activity integrating a Sinclair computer. They will also tell us what they have been working on since the Area Science Fair ended.

We look forward to this interesting and informative event, and the chance to give these creative students some of the recognition and appreciation they so richly deserve.

Hank Dickson

C.A.T.S.

Continued from page 1.

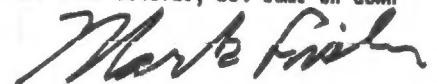
Last Meeting....

I had other commitments, so this isn't a first-hand report. David Urrutia arranged for a talk by a member of his stock analysis users group. This speaker gave an overview of his method of stock analysis, and some approaches to writing stock analysis programs. Following that, Jules Gesang gave a presentation on MODEMs, and their operation.

And Next.

Hank Dickson has persuaded two teenagers who won the local science fair using T/S 1000's, to come and show us what they've done. Perhaps they'll join the group! Tony Brooks has hand-imported a brace of microdrives and an Interface 1 for his 2068, and he'll be showing us how that goes. I know it'll be nice outside, but come on down anyway!

Newsletter





**MEMBERSHIP  
CERTIFICATE**

**Call (800) 336-3366 with your Claim #7779601.  
In Virginia or outside the continental U.S. call (703) 821-6666.**

This certificate entitles the bearer to a membership in The Source for only \$29.95 -- a savings of \$20 off our suggested retail price of \$49.95 to claim your \$29.95 membership.

1. Call The Source at (800) 336-3366 no later than June 15, 1985 and give us your claim number (above) and Inland's ID number (on the reverse side of this certificate).
2. The Source representative will ask for your credit card number (VISA, MasterCard and American Express) to which your \$29.95 membership fee and future charges\* will be billed. Your ID and password will be issued to you at once. Be sure to write them down below for handy reference.
3. Your new SourcePak including your membership agreement and manual -- will be delivered to you within 10 days. Complete, sign, and return the agreement to us immediately in the envelope provided.

**THIS OFFER EXPIRES JUNE 15, 1985. CALL 800-336-3366 NOW!**

Enter your new ID

System #

Password

Local access number

\*A membership in The Source includes a \$10 monthly minimum charge. Hourly connect time charges are \$20.75 7AM-9PM, \$11.00 weekends and \$7.00 all other times. There is a \$5 surcharge for 1200 baud during daytime and \$4 surcharge for 1200 baud weekends and evenings. Ask The Source representative for details.

**SPECIAL! SPECIAL! SPECIAL!**

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YOU can't live without your telephone. And you're getting pretty attached to your computer. What if you hooked the two together? Just think--you could send your favorite program to a friend! Play a game with your Grandmother, who lives in Hawaii! The necessary link? A MODEM. UNLIKE prices of computers, printers, monitors, and disk drives, prices of modems have not dropped much during the past year. Modems can cost as much as or more than the computers they work with, probably because they've been aimed, to date, more at the business market than the home market. BUT the recent introduction of new high-speed modems for business use means that prices on 300 and 1200 baud modems should begin to drop. After all, a modem consists of a single chip, compared to the dozens of chips and circuit boards needed to make a computer, and is relatively easy to assemble. As it is, there are good modems on the market for under \$80.

A MODEM connects your computer to the telephone lines--the same telephone lines you use to order a pizza. The modem translates computer data (an "on/off" digital signal). Then, the modem at the other end translates the analog signal back to digital so the other computer can understand it. Think of a modem as an interpreter at the U.N.. Better yet, don't think about it at all. Just plug it in and follow directions!

WHAT YOU NEED TO CONNECT To install a modem and successfully "telecommunicate" you need, besides your computer, four things: 1. A modem. 2. A cable between the modem and the serial port on your computer; or a plug-in slot for the modem. 3. A standard telephone line with a modular plug (preferable) or a standard telephone handset. 4. Communications software.

FOR TIMEX, both the BYTE-BACK and TIMEX/WESTRIDGE (16K required) modems are designed to plug into the back of the computer. The Anchor Automation Volksmodem can also be used with the Timex with an RS232 connection. You might also look into the Mura.

PHONE CONNECTION. In order for your computer to communicate with a distant computer, the modem must be connected to the telephone lines. You are simply "making a call," and sending data instead of your mellifluous voice. Virtually all modern modems have modular jacks so you can plug in the telephone line. These are called direct-connect modems, to distinguish them from the acoustic couplers, the old-fashioned modems with cups that fit over the telephone. Some modems have two jacks--one for an outside telephone line and one for a line to your phone. This way, you can keep your phone connected to the modem, and the modem connected to the outside lines. Otherwise, you have to unplug the line from your phone and plug it into the modem whenever you switch from voice to data. ACOUSTIC couplers, though considered old-fashioned and less efficient than direct-connect modems (because they sometimes allow ambient room noise to creep into the line), do have one major advantage over direct-connect modems. The couplers can be used in hotel rooms or phone booths, or anywhere phone lines are hard-wired and not connected with detachable modular jacks. Thus, for those on the move, an acoustic coupler might make sense. IMPORTANT NOTE: If you have a "call waiting" feature as part of your phone service, it will wreak havoc with your computer communications. When you're connected to an outside computer, the call waiting buzz will disconnect the call.

TO BE CONTINUED: Communications Software. Features to consider in a modem. TIME IS MONEY! Operating Cost Comparison 300- vs 1200-BAUD MODEM.

## NEW GENERATION OF PRINTERS

A new generation of dot matrix printers, heralded over a year ago by Epson's LQ1500, is now on the market. New on this writer's desk is a Star SG 15, recent upgrade of the Gemini 15. Listing at just under \$500--and available for \$100 less than that--these printers and their SG 10 "twins," come equipped with ultra hi-res graphics and near letter quality print. This item is printed in the later. The SG 15 also comes with a 16K buffer. Once in print mode, unless the item printed is larger than the buffer, the computer is free to go, or be turned off.

Software available to this writer does not allow adequate demonstration of the SG 15's "tales of joy and wonderment!" The software does not support the esc. codes in which proportional spacing, right justification, centering, enhanced print, and change of print mid-text are coded.

One small item that helped sell this machine is its ribbon. It's similar to a typewriter ribbon that sells for three dollars, not the six to ten dollars required for ribbon replacement on some printers.

One shortcoming, from this view, is an absence, in the carriage area, of any callibration to indicate where it prints column 0. One is stuck with locating paper by guess, no doubt more educated all the while by trial and error!

There was a malfunction and replacement which left an early bad taste, but otherwise the Star SG 15 has been a joy promising further "tales of wonderment" once software is available to do the tricks!

Bill Ware

\*\*\*\*\*  
ROMSWITCH + ROMFIX = SO LONG FOR NOW.  
\*\*\*\*\*

Thanks a lot Bill Russell! This is probably the last ROMSWITCH column.

Those of you who have Bill Russell's fantastic ROMSWITCH or are contemplating buying one have been aware that there were a certain percentage of Spectrum programs that would not run on the 2068 with the ROMSWITCH.

Not anymore.

Bill Russell has incorporated John Olinger's nifty ROMFIX into the ROMSWITCH and virtually all Spectrum programs will most likely work. I would like to say 100%, but I've only run 70 to 80 programs, and there are thousands out there. I'd go so far as to say we are talking maybe 99.9%.

Now there is no need for a column to tell C.A.T.S. which Spectrum programs work and which do not.

I was thinking the other day of those smarties with TI 99's, Atari's and ADAM's. They looked down there noses at TIMEX owners and their "little" machines. Well guys, our machine LIVES! Sinclair didn't throw in the towel. The Z81 and Spectrum development continues quite nicely thank you. That means as long as they sell English computer magazines in the U.S. and the international postal system works, the TS 1000(Z81) and the TS 2068(Spectrumized) have a long life expectancy.

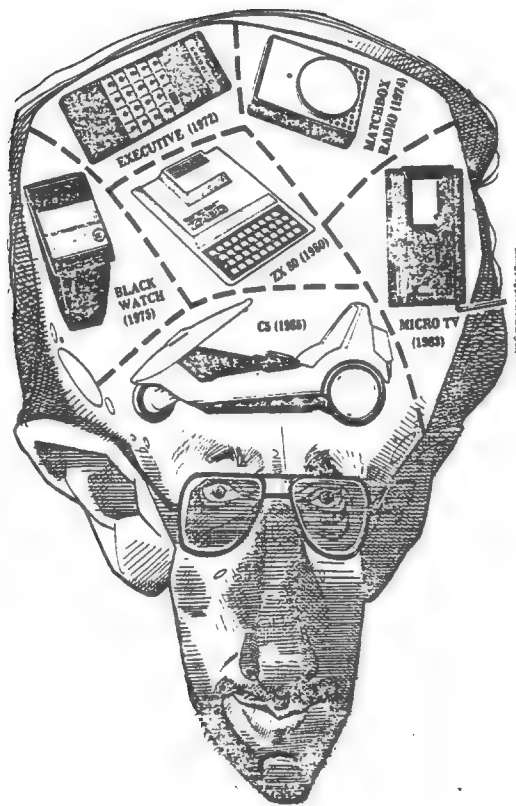
The ROMFIX is a relatively straight forward idea. Make the 2068 act even more like a Spectrum. In simple terms, add a bunch of 10K ohm pullup resistors to the data lines, place them on a socket under the EXROM in the 2068, and it works.

The ROMFIX does not seem to bother the 2068 operation at all.

For all the technical folks, there is a do-it-yourself article on this in the March-April SYNCWARE NEWS.

With Spectrum joy-stick adapters, add-on interfaces and mass storage systems almost upon us, having a 2068 (if you can find one) is just plain neat.

This was written with Tasword II and printed with a Star PowerType.



## THE NINE LIVES OF CLIVE

edited from: The Sunday Times(London), 28 April 1985

Fame and fortune come in many guises. Last month Sir Clive received the ultimate accolade that can be bestowed on an electronics wizard: he became the living subject of a computer game. The game is called *A Day in The Life* and is produced by a small software house called Micromega.

Sinclair has become a legend as one of the most prodigious inventors since Leonardo. The first pocket calculator, one of the first digital watches, the first sub £100 home computer and the first pocket TV set - Sinclair has fairly hurled his inventions into gaps in the market place.

Thanks to the Spectrum home computer, his name is as familiar to a generation under 18 years old as Superman (E.D. and just a few of us old folks, too).

The Sinclair empire today consists of two quite separate companies. One, Sinclair Research, makes the computers and the tiny flat-screen TV.

The other company, Sinclair Vehicles, was founded to make the CS electric trike, launched earlier this year.

Sinclair's QL, introduced last year, got off to a very slow start. Sinclair says 60,000 have now been sold - more than some have estimated. The QL is now being relaunched and goes into the States (this) month. "We have had 26,000 enquiries as the result of one review," claims Sinclair. He discusses his finances with little relish. It is not that he is unduly secretive, but that such mundane matters are a tedious diversion from his self-appointed mission in life: to bring technology to the masses at affordable prices. He has been described as the Freddy Laker of electronics, and his grasp of financial small print or market demand may be hazy - but his enthusiasm for innovation is boundless.

A quixotic business style still reigns at Sinclair. Raymond Yap, a longstanding business acquaintance, and a managing director of one of Sinclair's contractors, says that Sinclair is shrewd indeed, but he is often "led by his ego and his desire to see products getting into the market. He lacks that detached logic that might hold him back from some of the less commercially viable ideas". Some would say that to launch the CS, an open-topped vehicle, in Britain in January was an example of just such impetuosity.

Sinclair's career started in technical journalism, but soon graduated to commerce. He bought reject chips from Plessey, tested them, and sold the good ones. In the 1960's he rescued Cambridge Consultants from a takeover bid. A decade later, the infamous "black watch" came close to bringing Sinclair Radionics to its knees. Little has gone smoothly, and with the exception of the Spectrum, none of Sinclair's many gadgets has achieved true, untrammelled success.

"We only got involved in computers", says Sinclair, "in order to fund the rest of the business". Now the tail has grown mightily and wags the dog fearlessly. Some of his most dedicated fans would like him to amputate that tail and return to what he does best.

"Clive should spend his time inventing new products - an area where he is an undisputed genius - not running around controlling a business with £100m turnover and volatile profits", said one. The logic is compelling. It leads inevitably to a shedding of the computer business and a return to the world of research and development. But where that logic leads, Sinclair is clearly not disposed to follow. He likes to call the shots and he values a direct line to his public. He isn't going to give those up easily.

Here's a reference card of useful information for  
your TS1000 -

Jim MacKenzie

**TRANSFER**

HEXCODE	MNEMONIC	COMMENT
01B800	LD BC,00B8	SIZE
118240	LD DE,4082	DESTINATION
214843	LD HL,4348	SOURCE
EDB0	LDIR	TRANSFER
C9	RET	

**BINARY CONVERSION**

DEC	HEX	BIN	DEC	HEX	BIN
0	0	0000	8	8	1000
1	1	0001	9	9	1001
2	2	0010	10	A	1010
3	3	0011	11	B	1011
4	4	0100	12	C	1100
5	5	0101	13	D	1101
6	6	0110	14	E	1110
7	7	0111	15	F	1111

```

8110 REM ■ DEC TO HEX
8120 DIM H$(4)
8130 INPUT C
8140 LET D=C
8150 FOR I=4 TO 1 STEP -1
8160 LET E=INT (D/16)
8170 LET H$(I)=CHR$ (D-16*E+28)
8180 LET D=E
8190 NEXT I
8200 PRINT C;" = ";
8210 IF C>255 THEN PRINT H$(1);H
$(2);
8220 PRINT H$(3);H$(4)
8230 STOP
8310 REM ■ HEX TO DEC
8320 REM
8330 INPUT H$
8340 LET D=CODE H$(1)-28
8350 FOR I=2 TO LEN H$
8360 LET D=16*D+CODE H$(I)-28
8370 NEXT I
8380 PRINT H$;" = ";D
8390 STOP
8510 LLIST 8100
8520 RETURN

```

**FUNCTIONS**

CHR\$(NUM)	CHAR WHOSE NUMBER IS IN THE CHAR SET
LEN(STRING)	LENGTH OF STRING
STR\$(NUM)	CHAR STRING OF NUM
ABS(NUM)	ABSOLUTE VALUE OF A NUMBER (-3.25=3.25)
CODE(STRING)	DECIMAL VALUE OF FIRST CHAR IN STRING
INT(NUM)	NEAREST WHOLE NUMBER AFTER ROUNDING DOWN
SGN(NUM)	0=ZERO 1=POSITIVE -1=NEGATIVE
VAL(STRING)	NUM EXTRACTED FROM CHARACTER STRING

ALL TRIG FUNCTIONS IN RADIANS

RAD TO DEG	DEG=RAD*180/PI
DEG TO RAD	RAD=PI*DEG/180
RAD TO GRAD	GRAD=63.661977*RAD
GRAD TO RAD	RAD=GRAD/63.661977
DEG TO GRAD	GRAD=DEG/.9
GRAD TO DEG	DEG=GRAD*.9

**PRECEDENCE OF FUNCTIONS**

FUNCTIONS	PRIORITY
ALL FUNCTIONS (EXCEPT LEADING MINUS AND NOT)	16
**	10
LEADING MINUS	9
* /	8
- +	6
= >= <= > < <>	5
NOT	4
AND	3
OR	2

**ERROR CODES**

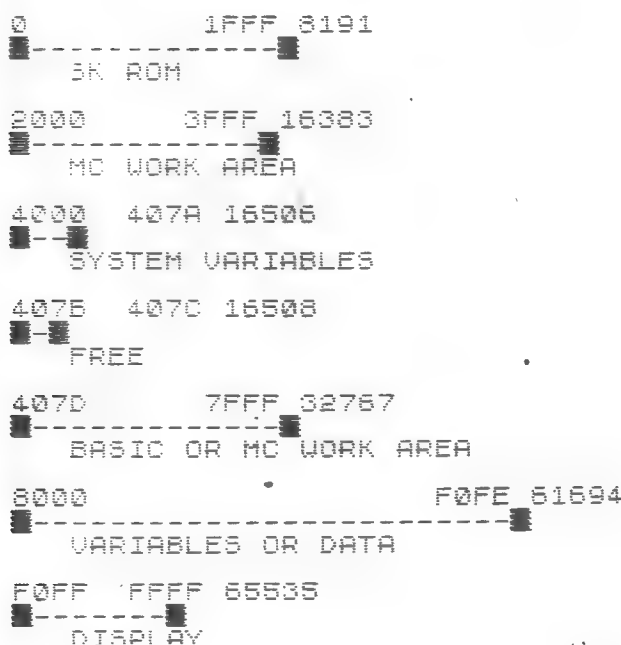
0	SUCCESSFUL EXECUTION OR GOTO LINE TOO BIG
1	NEXT HAS INVALID VARIABLE BUT VARIABLE IS ASSIGNED
2	VARIABLE NOT ASSIGNED OR DIMENSIONED
3	BAD SUBSCRIPT
4	MEMORY EXHAUSTED
5	SCREEN FULL
6	ARITH NUMBER TOO LARGE
7	RETURN BEFORE GOSUB
8	INPUT ATTEMPTED IN COMMAND MODE, ILLEGAL
9	STOP WAS EXECUTED
A	INVALID PARAMETER
B	INVALID INTEGER
C	INVALID DATA IN VAL STRING
D	BREAK WAS PRESSED
F	SAVE NAME IS A NULL STRING, ILLEGAL

**SYSTEM VARIABLES**

DEC	HEX	DESCRIPTION
16384	4000	ERROR CODE MINUS ONE
16385	4001	BASIC SYS CNTRL FLAG
16386	4002	ADDR OF NEXT INSTR AFTER RETURN
16388	4004	ADDR OF LAST AVAIL BYTE + 1
16390	4006	CURSOR MODE (K,F,G,L)
16391	4007	CURRENT BASIC STATEMENT NUMBER
16393	4009	ROM VERSION CODE 0=8K
16394	400A	BASIC STMT NUM AT CURSOR
16396	400C	ADDR OF SCREEN
16398	400E	ADDR OF NEXT SCREEN PRINT POSITION
16400	4010	ADDR OF PROG VAR
16402	4012	ADDR OF ASSIGN VAR
16404	4014	ADDR OF WORKING STOR
16406	4016	ADDR OF BYTE AFTER PEEK OR POKE
16408	4018	ADDR OF SYNTAX ERROR MINUS ONE
16410	401A	ADDR OF CALC STACK
16412	401C	ADDR OF END OF CALC STACK
16414	401E	B REGISTER OF CALC
16415	401F	ADDR OF CALC MEMORY
16418	4022	NUM OF LOWER SCREEN LINES
16419	4023	NUM OF FIRST BASIC STMT ON SCREEN
16421	4025	LAST KEY PRESSED
16423	4027	KEYBOARD DEBOUNCE STATUS
16424	4028	NUM OF BLANK LINES ABOVE AND BELOW MOVING DSPL
16425	4029	ADDR OF NEXT BASIC STMT LINE
16427	402B	NUM OF STMT TO "CONT"
16429	402D	SYSTEM FLAG BITS
16430	402E	STRING TYPE LENGTH
16432	4030	ADDR OF NEXT SYNTAX TABLE ENTRY
16434	4032	RANDOM NUM SEED
16436	4034	SCREEN FRAME DSPLY COUNT
16438	4036	LAST PLOT OF X COOR
16439	4037	LAST PLOT OF Y COOR
16440	4038	LSB OF ADDR OF NEXT LPRINT POSITION
16441	4039	PRINT COL NUM
16442	403A	PRINT LINE NUM
16443	403B	INTERNAL FLAG BITS
16444	403C	PRINTER BUFFER
16477	405D	CALC AUX MEMORY

**MEMORY MAP**

FROM	TO		
0	1FFF	8191	8K ROM
2000	3FFF	16383	MC WORK AREA
4000	407A	16506	SYS VARIABLES
407B	407C	16508	FREE
407D	7FFF	32767	BASIC OR MC
8000	F0FE	61694	VAR OR DATA
F0FF	FFFF	65535	DISPLAY



**HEX DEC CONVERSION**

HEX	DEC	HEX	DEC	HX	DEC	H	D
1000	4096	100	256	10	16	1	1
2000	8192	200	512	20	32	2	2
3000	12288	300	768	30	48	3	3
4000	16384	400	1024	40	64	4	4
5000	20480	500	1280	50	80	5	5
6000	24576	600	1536	60	96	6	6
7000	28672	700	1792	70	112	7	7
8000	32768	800	2048	80	128	8	8
9000	36864	900	2304	90	144	9	9
A000	40960	A00	2560	A0	160	A	10
B000	45056	B00	2816	B0	176	B	11
C000	49152	C00	3072	C0	192	C	12
D000	53248	D00	3328	D0	208	D	13
E000	57344	E00	3584	E0	224	E	14
F000	61440	F00	3840	F0	240	F	15

Determine the day  
of the week.

The following 2068 program calculates the day of the week for any date given in terms of month, day, and year. With just a few modifications, the program will run on the TS-1000. The multiple statement line (350), for example, will have to be written as individual statements.

Ward Seguin

```
10 PRINT " Determine the day o
f the week."
20 PRINT
30 PRINT
40 PRINT "Enter month (i.e. JU
ne = 6) :";
50 INPUT M
60 PRINT M
65 PRINT
70 PRINT "Enter day of month (
1 to 31) :";
80 INPUT D
90 PRINT D
100 PRINT
110 PRINT "Enter year (e.g.1985
) :";
120 INPUT Y
130 PRINT Y
140 PRINT
150 REM ...Calculations...
160 IF M>2 THEN GO TO 190
170 LET M=M+2
180 LET Y=Y-1
190 LET N=D+2*M+INT (.6*(M+1))+
Y+INT (Y/4)-INT (Y/100)+INT (Y/4
00)+2
200 LET N=INT ((N/7-INT (N/7))*
7+.5)
210 LET S=240+(N*10 )
215 PRINT
216 PRINT
217 PRINT
220 PRINT " The day is ";
230 GO TO S
240 PRINT "Saturday!!!": GO TO
350
250 PRINT "Sunday!!!": GO TO 35
0
260 PRINT "Monday!!!": GO TO 35
0
270 PRINT "Tuesday!!!": GO TO 3
50
280 PRINT "Wednesday!!!": GO TO
350
290 PRINT "Thursday!!!": GO TO
350
300 PRINT "Friday!!!": GO TO 35
0
350 PRINT : PRINT : PRINT : PRI
NT
360 PRINT "To determine another
date, key:
" run/enter.
370 STOP
```

## WHY MACHINE CODE?

At least twice in prior administrations attempts have been made to start Machine code classes, but they never got off the ground. No one seems sure why. By the time you get this News Letter we should have had two such classes at Chevy Chase Library, May 25th and June 1st. Application has been made to hold three meetings a month there, which takes special ok's and a bit of red tape cutting. If successful, it will be announced at the regular June meeting.

In any event, we WILL have MC meetings. Several members have already bought or otherwise acquired the Zaks book: "Programming the 280".

But WHY MC? First, it is fast, fast, fast. If you want to modify existing MC programs, its the only way to go. If, for no other reason, you want to know how and why the computer works, really, you have to understand how the microprocessor manipulates all those binary bits of 0's and 1's in 22 different registers and the stacks. Further, you have to understand the make up of the ROM, memory organization and system variables, not to speak of the floating point calculator.

Come take the course with us and learn what computing is all about, even if you don't plan to become the worlds best programmer. It's interesting and satisfying. (John Conger)

### EXAMPLE

```
Determine the day of the week.
Enter month (i.e. June = 6) :4
Enter day of month (1 to 31) :28
Enter year (e.g.1985) :1985
```

The day is Sunday!!!



**SuperBASIC  
BASIC for the QL  
Alex. F. Burr K5XY**

SuperBASIC is the name Sinclair has given to the programming language which comes with the QL. It is more than just Microsoft BASIC with expansions and it has many significant differences from the BASIC used by the T/S 1500 or even the T/S 2068. First of all, single keystroke command entry has been eliminated in favor of a simplified keyboard. But this change is only the most noticeable one.

Another very noticeable change is in the punctuation used. Many times when two words would logically be used in a command, an underscore is used to join these words, into a single word command, but with the appearance and readability of two words. For example, LINE is a graphics command which draws a line in absolute coordinates. To draw the line in relative coordinates, the command is LINE\_R. Furthermore the examples make frequent use of this concept in the naming of variables as in READ test\_data or PRINT error\_count. This effect takes a little getting used to but seems like a good idea and should make for more readable programs.

The biggest change is a more fundamental one. BASIC was designed to be a simple, easy to learn language. As such, it had severe limitations. Since its beginning, expansions have tried to overcome its inflexibilities but at the expense of complications. Now the latest programming enthusiasm is for structured programming as exemplified by many PASCAL programs. Several new commands added to SuperBASIC permit many of the ideas of structured programming. In particular, subroutines and loops can be named and called by these names.

One of these new commands is DEFINE PROCEDURE. (Note that these words are a combination of upper case and lower case. That is not an example of my bad typing. The whole word is the proper command and the upper case part is the acceptable abbreviation.) This command is really much like a subroutine. In fact, the manual recommends that GOSUB not be used; although for compatibility reasons the GOSUB command is available. The DEFINE PROCEDURE is much more flexible. It can even pass parameters just as in FORTRAN. The main advantage of the new way of doing things is that the subroutines can be named so that their functions can be easily recognized. FOR loops are also named and ended with an END FOR statement. (NEXT is used to cause only part of a loop to repeat). A third new command is REPEAT which does just that for a group of lines until some condition causes an EXIT.

All these new commands make SuperBASIC harder to learn. Fortunately you do not have to make use of these commands. The old, easy to learn ones are still there for the most part and can be used until the demands for flexibility force you to learn new methods.

SuperBASIC includes most of the functions, procedures, and constructs found in other dialects of BASIC. Many of these functions are superfluous in SuperBASIC but are included for compatibility reasons:

GOTO	use IF, REPEAT, etc
GOSUB	use DEFINE PROCEDURE
ON .. GOTO	use SELECT
ON .. GOSUB	use SELECT

Some BASIC commands are included in SuperBASIC and still have a genuine use:

READ	DATA
RESTORE	REMARK
PEEK	POKE
LIST	NEW
RUN	STOP
CLEAR	

Some commands appear not to be present. They can always be obtained by using a more general function. For example, there are no LPRINT or LLIST statements in SuperBASIC but output can be directed to a printer by opening the relevant channel and using PRINT or LIST.

LPRINT	use PRINT #
LLIST	use LIST #
VAL	not required
STR\$	not required
IN	not applicable to 68008
OUT	not applicable to 68008

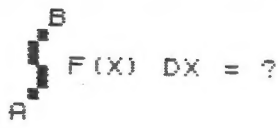
All in all, there are 107 distinct commands or keywords as they are called. Actually, if variants of these keywords or closely related ones, are counted you get quite a few more than 107. The manual divides them up into 28 haphazard and confusing groups. If one tries for fewer and more independent groups, one can divide the keywords into the categories listed in the following table.

Category	Number of Keywords
Basic commands	26
INPUT/OUTPUT	22
Math functions	20
Window commands	14
Procedures	12
Graphic commands	9
Clock	4

In summary one can say that SuperBASIC is much more flexible and structurable than the usual BASIC. Unfortunately (and inevitably) it will be harder to learn. The language is certainly sophisticated enough for serious programming.

QZX, December 1984

**NUMERICAL INTEGRATION**  
BY RICK WHITE



DEFINITE INTEGRALS OF THE ABOVE FORM ARE APPROXIMATED USING SIMPSON'S RULE

A DEFINITE INTEGRAL MAY BE CONSIDERED AS THE AREA UNDER A CURVE. THE AREA IS APPROXIMATED BY PARTITIONING THE REGION INTO AN EVEN NUMBER OF SUBINTERVALS, AND SUMMING THE AREAS UNDER THE CURVE FOR EACH SUBINTERVAL. THE MORE PARTITIONS, THE CLOSER THE APPROXIMATION COMES TO THE TRUE VALUE OF THE INTEGRAL.

THIS PROCEDURE IS KNOWN AS SIMPSON'S RULE, AFTER THE ENGLISHMAN THOMAS SIMPSON.

THE RESULTING FORMULA IS

$$\begin{aligned}
 & \int_A^B F(X) DX = (H/3) ( Y(0) + 4*Y(1) \\
 & + 2*Y(2) + \dots + 2*Y(N-2) \\
 & + 4*Y(N-1) + Y(N) )
 \end{aligned}$$

WHERE  
 $H = (B-A)/N$ , THE LENGTH BETWEEN PARTITIONS  
 $N$  IS THE NUMBER OF PARTITIONS, AN EVEN INTEGER  
 $Y(K)$  IS THE VALUE OF THE FUNCTION  $F$  AT THE POINT  $X(K)$   
 $Y(0) = F(A)$  AND  $Y(N) = F(B)$

**NOTICE**

Because of our continuing difficulties with the post office - some members are just now getting their May issues of the newsletter - a trace is being put on the June mailing. About 25 of you will find a postcard in your newsletter. Fill it out and return it at once, please. We can't afford to keep giving out replacement copies for late issues. Thank you.

```

10 PRINT AT 1,5;"NUMERICAL INT
EGRATION"
20 PRINT TAB 9;"BY RICK WHITE"
30 PLOT 5,33
40 PLOT 4,32
50 PLOT 4,31
60 PLOT 5,30
70 PLOT 5,29
80 PLOT 4,28
90 PRINT AT 8,1;"A"
100 PRINT AT 4,3;"B"
110 PRINT AT 6,4;"F(X) DX = ?"
120 PRINT AT 13,0;"DEFINITE INT
EGRALS OF THE ABOVE"
130 PRINT TAB 2;"FORM ARE APPRO
XIMATED USING"
140 PRINT TAB 9;"SIMPSON'S RULE"
"
150 PRINT AT 20,0;"ENTER INTEGR
AND IN TERMS OF X:"
160 INPUT Y$
170 LET Y$="("+Y$+)"
180 PRINT AT 6,4;Y$;" DX = ?"
190 PRINT AT 20,0;"ENTER LOWER
INTEGRATION LIMIT:"
200 INPUT A
210 PRINT AT 8,1;A
220 PRINT AT 20,0;"ENTER UPPER
INTEGRATION LIMIT:"
230 INPUT B
240 PRINT AT 4,3;B
250 PRINT AT 20,0;"ENTER NUMBER
OF PARTITIONS:"
260 INPUT N
270 FAST
280 LET N=N*2
290 LET X=A
300 LET S=VAL Y$
310 LET I=(B-A)/N
320 FOR K=1 TO N-1
330 LET X=A+K*I
340 LET Y=VAL Y$
350 LET Y=Y*2
360 IF (K-2*INT (K/2)) THEN LET
Y=Y*2
370 LET S=S+Y
380 NEXT K
390 LET X=B
400 LET S=VAL Y$+S
410 LET S=S*I/3
420 PRINT AT 6,4;Y$;" DX"
430 PRINT AT 8,16;"
"
440 SLOW
450 PRINT AT 8,16;"= ";S
460 PRINT AT 20,0;"NEED GREATER
ACCURACY? (Y OR N)"
470 IF INKEY$="" THEN GOTO 470
480 IF INKEY$="Y" THEN GOTO 250
490 IF NOT (INKEY$="" OR INKEY$
="Y") THEN GOTO 490
500 PRINT AT 20,0;"ANOTHER INTE
GRAL? (Y OR N)"
510 IF INKEY$="" THEN GOTO 500
520 IF NOT INKEY$="Y" THEN STOP
"
530 CLS
540 RUN
550 SAVE "INTEGRATE"
560 RUN

```

JUNE 1985

Capitol Area Timex/Sinclair Users' Group  
P.O.Box 725  
Bladensburg, MD 20710

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_ ZIP \_\_\_\_\_

Phone Home \_\_\_\_\_ Office \_\_\_\_\_

memberships - \$15.00 (family/individual); make checks payable to C.A.T.S.

If family membership, please list family members participating:

Occupation \_\_\_\_\_

Ham Radio call sign \_\_\_\_\_

Equipment

ZX 80 \_\_\_\_\_ RAM size \_\_\_\_\_

MA 80 \_\_\_\_\_ full keyboard \_\_\_\_\_

ZX 81 \_\_\_\_\_ Printer \_\_\_\_\_

TS 1000 \_\_\_\_\_ type \_\_\_\_\_

TS 2000 \_\_\_\_\_ other interface \_\_\_\_\_

Special interest use for computer: ie, games, ham radio interface,  
business, other, etc. \_\_\_\_\_

Languages: Basic \_\_\_\_\_ Other \_\_\_\_\_

Machine \_\_\_\_\_

No. of years computer experience \_\_\_\_\_

What committees would you like to serve on? \_\_\_\_\_

Comments: *tell us how you heard about C.A.T.S.*

Do not write below:

Dt. Pd. \_\_\_\_\_ Amt. \_\_\_\_\_ Membership No. \_\_\_\_\_

Ca. \_\_\_\_\_ Ck. \_\_\_\_\_

The mailing address of the Capitol Area Timex/Sinclair Users Group is:  
 Capitol Area Timex/Sinclair Users group  
 P.O. Box 725  
 Bladensburg, MD 20710

CATS is a non-profit special interest organization dedicated to serving the interests of those who own, use, or are interested in learning more about the Timex/Sinclair family of personal computers.

The official contact person for CATS is JULES GESANG: 301#922-0767

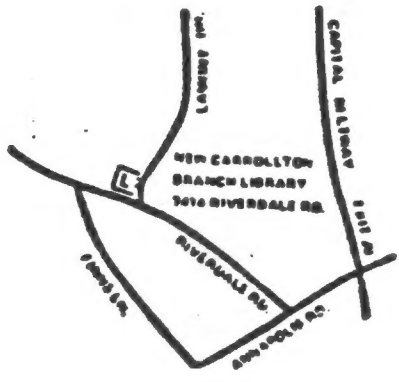
Meetings are held on the second Saturday of each month at 2 P.M. in the large meeting room of the New Carrollton Branch Public Library.

Ham Radio Network Information  
 OZX Net... Wednesdays, 9p.m. local time; 14.345 MHz N4F NCS  
 Eastern Regional Sinclair Net... Sundays, 1600 ZI 7.245 MHz KQZF NCS



CATS Newsletter  
 P.O. Box 725  
 Bladensburg MD 20710

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The next meeting of CATS will be held on:  
 Saturday, June 8, 1985 2 P.M.

New Carrollton Public Library  
 7414 Riverdale Road, New Carrollton, MD

IF YOU ARE NOT A MEMBER OF CATS, THIS IS THE ONLY ISSUE YOU WILL RECIEVE  
Dues = \$15.00 per year, per family.

**DATED MATERIAL**